

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A magnetic memory cell comprising:
a first magnetic layer;
a second magnetic layer; and
a nonmagnetic ~~spacer~~ coupling layer disposed between the first and second layers ~~for coupling the first and second layers to be parallel in zero field,~~ wherein the first magnetic layer comprises a first magnetization vector and the second magnetic layer comprises a second magnetization vector, wherein the first and second magnetization vectors are respectively in planes parallel with surfaces of the first and second magnetic layers, and wherein the coupling is strong enough to couple the vectors in parallel pointing in an easy axis direction in zero field and weak enough so that the vectors are coupled non-parallel when an applied field makes the vectors point in an in-plane hard axis direction.
2. (original) The magnetic memory cell of claim 1 wherein the first layer is thicker than the second layer.

3. (original) The cell of claim 1 wherein the first and second layers have substantially equal thicknesses.
4. (original) The cell of claim 2 wherein the first layer is thicker than the second layer by a factor of two or more.
5. (original) The cell of claim 4 wherein the first layer is thicker than the second layer by a factor of two or more and no greater than six.
6. (cancelled)
7. (original) The cell of claim 1 wherein the nonmagnetic spacer layer comprises one of an element or alloy that provides an amount of exchange coupling that results in antiparallel switching of logic state.
8. (original) The cell of claim 7 wherein the element or alloy comprises one of the group consisting of Ru, Os, Re, Rh, Mo, Ir, Cr, Cu, and V.
9. (original) The cell of claim 1 wherein the nonmagnetic spacer layer comprises a spacer material for providing a very large parallel coupling and a dusting layer for reducing the coupling.

10. (original) The cell of claim 9 wherein the spacer material comprises a Ru layer.
11. (original) The cell of claim 10 wherein at least one of the surfaces of the Ru layer is dusted with another material for reducing the coupling between the first and second magnetic layers.
12. (original) The cell of claim 1 wherein the two magnetic layers separated only by a thin layer of a nonmagnetic material comprising pinholes.
13. (currently amended) The cell of claim 6 wherein the coupling is weak enough to couple the layers anti-parallel when the layers point in ~~the~~ a hard axis direction.
14. (currently amended) A ~~cell~~ method for coupling a first magnetic layer to a second magnetic layer comprising:
- introducing a nonmagnetic layer disposed between the first and second magnetic layers ~~for coupling the first and second layers to be parallel in zero field,~~ wherein the first magnetic layer comprises a first magnetization vector and the second magnetic layer comprises a second magnetization vector, wherein the first and second magnetization vectors are respectively in planes parallel with surfaces of the first and second magnetic layers, and wherein the coupling is strong enough to couple the vectors in parallel

pointing in an easy axis direction in zero field and weak enough so that the vectors are coupled non-parallel when an applied field makes the vectors point in an in-plane hard axis direction.

15. (original) The method of claim 14 further comprising providing first and second layers having substantially equal thicknesses.

16. (original) The method of claim 14 further comprising providing first and second layers wherein the first layer is thicker than the second layer by a factor of two or more.

17. (original) The method of claim 14 further comprising providing a first layer that is thicker than the second layer by a factor of two or more and no greater than six.

18. (cancelled)

19. (original) The method of claim 14 further comprising providing a nonmagnetic spacer layer that comprises one of an element or alloy that provides an amount of exchange coupling that results in antiparallel switching of logic state.

20. (original) The method of claim 14 further comprising providing a nonmagnetic spacer layer that comprises a spacer material which gives very large parallel coupling and a dusting layer for reducing the coupling.

21. (original) The method of claim 14 further comprising providing a Ru layer dusted with a few Angstroms of another material that produces a much smaller coupling for reducing the coupling between the first and second magnetic layers.